Space Weather Forecast

Issued on Wednesday, 06 July 2022 at 13:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight but increasing chance of R1-R2 Minor-Moderate radio blackouts. Chance of Minor Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours. The most significant event was a Common-class flare at 05/1238UTC from the northeast quadrant. There are currently six sunspots on the disc, with the most complex being the sunspot region in the northeast quadrant. All other remaining sunspots appear to be relatively small and stable. However, a larger Common-class flare produced by a sunspot, which is no longer visible on the disc, produced a faint partial halo Coronal mass Ejection (CME), which has been analysed and may give a glancing blow at Earth on July 8th, although confidence is low. No other Earth-directed CMEs have been observed in available imagery over the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind has remained at background levels, currently around 330km/s, before the likely beginning of an entry into a coronal hole fast wind. The Interplanetary Magnetic Field was weak throughout but with a recent increase, with the north-south component varying very weakly and mainly northward directed, until the end of the period. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is Expected to be Low, with a Slight Chance of isolated Moderate-class flares. An increase is probable through the period as returning regions potentially rotate onto the eastern limb.

Solar Wind / Geomagnetic Activity: Earth may experience a glancing blow from the CME which occurred at 05/0407 UTC. This CME was difficult to assess, however it gave a faint partial halo in SOHO imagery and as such a low confidence glancing blow is possible at Earth on 08 July. Otherwise, solar winds are anticipated to increase from background to slightly elevated or elevated levels due to a coronal hole fast wind, most likely during Day 1 (06 July). Elevated or slightly elevated wind speeds could last for much of this period.

Overall, geomagnetic activity is likely to increase during on Day 1 initially Quiet to Active possibly with the odd G1/Minor Storm interval, these most likely on Days 1 and 3 (06 and 08 July) as the fast wind arrives on Day 1 and the possible CME on Day 3.

Energetic Particles / Solar Radiation: In the absence of any significant sunspot development, no solar radiation storms are expected, with only one fading sunspot in the western solar hemisphere at present.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	20	30	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	25	30	30
Very Active	R3 to R5 X	No	1	2	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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